

THE CLAIMS

What is claimed is:

1. A gas cabinet assembly for dispensing of gas to a process facility, said gas cabinet assembly comprising:

a housing enclosing an interior volume configured for positioning of at least one process gas supply vessel therein;

a discharge passage for flow of dispensed process gas out of the housing;

flow circuitry in said interior volume, interconnecting said at least one gas supply vessel and said discharge passage, and arranged for flow of process gas dispensed from a said gas supply vessel to the discharge passage in a first mode of operation;

a purge gas source coupled with the flow circuitry and arranged to flow purge gas through the flow circuitry to purge residual hold-up process gas from the flow circuitry in a second mode of operation subsequent to said first mode of operation, wherein the purge gas and residual hold-up process gas together form a purge effluent;

a dry scrubber unit coupled with the flow circuitry to receive the purge effluent, said dry scrubber unit including a dry scrubbing medium arranged to sorptively remove process gas from the purge effluent and yield a process gas-depleted purge effluent;

a venturi pump coupled with the dry scrubber unit to remove the process gas-depleted purge effluent from the dry scrubber unit; and

an exhaust passage coupled with the venturi pump to discharge the process gas-depleted purge effluent from the housing.

2. The gas cabinet assembly of claim 1, wherein the discharge passage for flow of dispensed process gas out of the housing, is joined in process gas feed relationship to a semiconductor manufacturing tool.

3. The gas cabinet assembly of claim 1, wherein the semiconductor manufacturing tool includes an ion implanter or a chemical vapor deposition chamber.
4. The gas cabinet assembly of claim 1, further comprising at least one process gas supply vessel positioned in the interior volume of the housing.
5. The gas cabinet assembly of claim 1, further comprising at least two process gas supply vessels positioned in the interior volume of the housing, wherein each process gas supply vessel is arranged for independent dispensing operation.
6. The gas cabinet assembly of claim 1, further comprising a multiplicity of gas panels.
7. The gas cabinet assembly of claim 7, further comprising a sub-atmospheric pressure gas supply vessel coupled to the process gas flow line of the gas panel in the active dispensing operational mode (I).
8. The gas cabinet assembly of claim 11, wherein the sub-atmospheric pressure gas supply vessel comprises a gas storage and dispensing vessel containing a solid-phase physical adsorbent having adsorbed thereon a gas for which the solid-phase physical adsorbent is physically adsorptive, as said process gas.
9. The gas cabinet assembly of claim 11, wherein the sub-atmospheric pressure gas supply vessel comprises a fluid storage and dispensing vessel containing a high pressure fluid, wherein the vessel comprises a gas flow regulator interiorly disposed therein, arranged for dispensing sub-atmospheric pressure process gas deriving from the high pressure fluid in the vessel.
10. The gas cabinet assembly of claim 12, wherein the process gas comprises a gas species selected from the group consisting of hydride gases, halide gases and organometallic compound gases.
11. The gas cabinet assembly of claim 13, wherein the process gas comprises a gas species selected from the group consisting of hydride gases, halide gases and organometallic compound gases.
12. The gas cabinet assembly of claim 1, wherein the dry scrubber unit includes an endpoint detector for the dry scrubbing medium.

13. The gas cabinet assembly of claim 12, wherein the endpoint detector includes a toxic gas monitor coupled with the dry scrubbing unit to monitor purge effluent flowed through the dry scrubbing unit for the presence of unremoved process gas.
14. The gas cabinet assembly of claim 13, wherein the purge effluent monitored by the toxic gas monitor is recirculated to the dry scrubbing unit.
15. A gas delivery process wherein process gas from a gas supply vessel is flowed through flow circuitry in a gas cabinet and dispensed from the gas cabinet, and the flow circuitry subsequent to process gas dispensing is purged with a purge gas to remove residual process gas from the flow circuitry and yield a purge effluent including the purge gas and residual process gas from the flow circuitry, said process comprising contacting the purge effluent with a dry scrubbing medium that is effective to remove the process gas from the purge effluent and yield a process gas-depleted purge effluent, and pumping the process gas-depleted purge effluent out of the gas cabinet with a venturi pump.
16. The process of claim 15, wherein the process gas dispensed from the gas cabinet is flowed to a semiconductor manufacturing tool.
17. The process of claim 15, wherein the gas cabinet contains at least two gas supply vessels, wherein each is arranged for dispensing operation, independent of the other(s).
18. The process of claim 17, wherein each of the gas supply vessels is coupled with a corresponding gas panel, and each gas panel includes a portion of the flow circuitry.
19. The process of claim 17, further comprising monitoring the dry scrubbing medium to determine depletion of the dry scrubbing medium.
20. The process of claim 19, wherein said monitoring comprises detection of a colorimetric change indicative of depletion of the dry scrubbing medium.